

R-Fe-B permanent magnet materials and process of producing the same

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It is an object of the present invention to provide R-Fe-B permanent magnet materials having a good oxidation resistance and magnetic characteristics, and a process of producing the same capable of pulverizing efficiently, whereby an R-Fe-B molten alloy having a specific composition is casted into a cast piece having a specific plate thickness and a structure, in which an R-rich phase is finely separated below 5 μ m, by a strip casting process, the cast piece is subjected to a Hydrogenation for spontaneous decay, and thereafter, an alloy powder is dehydrogenated and stabilized for pulverization so as to fractionize crystal grains of a main phase constituting an alloy ingot, thereby the powder having a uniform grain distribution can be produced at an efficiency of about twice as much as the conventional process, and the R-rich phase and an R₂Fe₁₄B phase are also fractionize at the time of pulverization, thus by magnetization by pressing after the

orientation using a pulse magnetic field, a high performance R-Fe-B permanent magnet having, a good oxidation resistance and magnetic characteristics of the magnetic alloy, particularly, a total value $A + B$ of a maximum energy product value $(BH)_{\max}$ (MGOe); A and a characteristic value; B of a coercive force iH_c (kOe) of 59 or more and the squareness of demagnetization curve $\{(B_r^2/4)/(BH)_{\max}\}$ of 1.01 to 1.045 is obtained.

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